

# Ontario increases subsidies

Government  
Publications

In 1969, the Province of Ontario implemented the provision of financial assistance to small municipalities in the form of capital subsidies not exceeding 50 per cent of the gross capital cost of water and sewage works systems. This program has been very successful in that more than 250 projects have been developed by the Ministry of the Environment utilizing this policy. Nevertheless, this still left a number of

municipalities burdened with charges exceeding the objectives of \$120 per year for sewage service and \$100 per year for water service.

To alleviate this situation, the Government of Ontario has approved of an increased financial assistance policy to be conducted by the Ministry of the Environment for water and sewage works systems in small municipalities. The previous limit of 50 per cent sub-

dization of capital costs has been increased to 75 per cent of the capital costs of the two systems.

## RESULTS

This will greatly assist Environment Ontario with its thrust towards eliminating pollution while at the same time providing adequate safe water for public consumption.

To properly reflect the inflationary trend in the cost of servicing, adjustments have also

been made in the objectives for typical home charges. The new charges on which the basis of financial assistance will be determined are \$130 for sewage service and \$110 for water service, and increase of \$10 per year from the objectives established in 1969.

This increase in assistance means that many small Ontario communities that could previously not afford to construct and operate these facilities

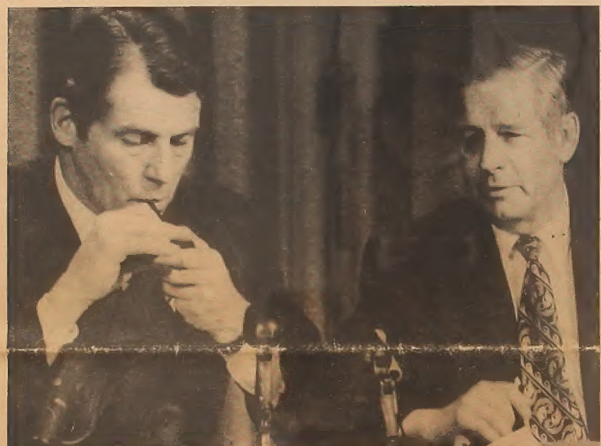
will now be able to do so. Over the next five years, the Ministry expects to spend more than \$60 million on subsidies. This is approximately \$27 million more than would have been spent under the 50 per cent grant structure. This change could involve 50 sewage works and 29 water works programs.

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ENVIRONMENT  
ONTARIO

LEGACY

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Environment Minister James Auld lights his pipe as Chairman A. S. Bray outlines the way the task force's working groups operate.

Photo: Ron Johnson

## Task force study:

# Options for containers

Ontario's solid waste task force has concentrated the attention of one working group on beverage container control. Environment Minister James Auld announced recently.

Introducing the task force to the press at a Queen's Park news conference, he indicated that some recommendations on beverage containers are expected by late spring.

"It's not a matter of picking on any particular industry," Mr. Auld said. "It is simply a matter of attacking the rather more visual and obvious products of a throwaway society first. If government action is needed to alleviate our litter problems, then undoubtedly that action will be taken."

"We do not plan to preside over the death of the returnable container. Our waste load is increasing steadily and I cannot accept any suggestion that the people of this province should pay for the convenience of the buyers, sellers, distributors and manufacturers who choose to use throwaway containers."

## REALISTIC PROGRAMS

The general objective laid down for this working group is to recommend realistic and acceptable programs for the progressive reduction of beverage containers entering the waste stream. This includes containers for soft drinks, beer, ale, wine and spirits.

Three possible courses of action were outlined in a position paper prepared by waste management branch staff and presented to the task force.

One option is the establishment of minimum deposits applied to all beverage containers, reusable or throwaway, which must be refunded on return of the container to the retail outlet.

The immediate effect of this measure would be to remove any distinction between reusable and throwaway containers as far as the consumer is concerned. The number of containers which may be returned by any customer would have to be controlled to prevent too great a burden for the smaller retailer.

## OPTIONS

The second option outlines a minimum statutory refund to be applied to reusable glass containers and an offsetting tax to be applied to throwaway bottles and cans. This levy, primarily a convenience penalty in terms of the throwaways, could be adjusted to encourage the use of reusable bottles.

Further provisions would be required in the course of action, to guarantee that retailers who stock beverages in non-returnable containers would also be required to offer the same drink in reusable containers.

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## New water, sewage plants

There are currently over 75 new water and pollution control treatment plants in the planning, design or construction stages in the province of Ontario.

These projects take the form of new facilities or extensions to existing ones, but they're all aimed at one object; to assure a plentiful supply of pure water and to see that all forms of municipal wastes are treated so that they will not endanger the province's lakes and watercourses.

The Ministry of the Environment and its branches have the responsibility to assist in the design and engineering of these projects and to see that they meet the needs of the areas they are intended to serve.

In 1972, the Ministry organized and co-ordinated several major plant openings. During the year, ceremonies were held at the new Elgin water system, and Hamilton's new \$23 million treatment plant extension. Other openings included Meaford, Seaforth, West Lorne, and Belleville.

Other important projects under construction or close to completion include: Alliston, Blezard Valley, Burk's Falls, Coniston, Ear Falls, Hearst,

Ignace, Ingersoll, Kent County, Kirkland Lake, Lambton County, Port McNicoll, Tillsonburg, Bradford, Port Perry, Prescott, Ridgeway, St. Mary's, Southampton, Sturgeon Falls, Whitney & Tisdale, Emo, Cannington and Longlac.

The Ontario Government, through the Ministry of the Environment, has negotiated

loans for hundreds of millions of dollars in its program of upgrading or building pollution control plants in areas that previously had ineffective or minimum treatment facilities. Of course, an important benefit from all this activity will be the eventual improvement of the quality of the Great Lakes, all of which are in the province's boundaries.

# Autos first noise target

The first of a series of noise control regulations will be introduced in Ontario this summer, Environment Minister James Auld announced.

He was speaking March 19, to the London Rotary Club.

"Our objective is to reduce the irritating and annoying sounds which invade our daily lives in many ways, to acceptable and reasonable levels." The Ministry's Air Management Branch has been studying various kinds of noise legislation and is drafting noise regulations under Ontario's Environmental Protection Act. Because of past difficulties experienced by agencies of all levels of government in devising effective and enforceable anti-noise measures, the Branch's progress has been careful and deliberate, he

pointed out.

"The most serious noise problem in most urban areas is produced by automotive traffic," Mr. Auld said. "For this reason, as its first step, the Ministry intends to regulate the operational noises of individual vehicles this coming summer."

The second step will be the establishment of ambient or overall noise level objectives for various types of areas throughout the province during 1973. These noise objectives will be specified for both day and night for the following areas of activity: rural residential, urban residential, commercial, industrial, mixed residential and commercial, and mixed residential and industrial. These suggested levels will be compared to the results of community noise

level studies which are being carried out in London, Hamilton, and Woodstock before the ambient objectives are issued, Mr. Auld added.

"Thirdly, the Ministry intends to put forward a regulation covering noise and/or vibration emitted from all types of stationary sources," Mr. Auld said. This regulation will limit noise levels at property lines with emphasis on decreasing the noise level in residential areas.

Mr. Auld added that, sometime in 1973, the Ministry also intends to draft a model by-law to combat local nuisance noises which could be put into effect by municipal authorities.

This year, he said, "we also hope to propose a regulation to control noise from recreational

devices with internal combustion engines, particularly snowmobiles."

"One of the most effective measures would be to reduce the noise potential of products at the manufacturing level."

Although some action could and may be taken by the province to prohibit the sale of noisy products in Ontario, the Ministry feels that the most effective legislation in this regard should originate at the federal level," said Mr. Auld.

"Noise is not a necessary evil and noise problems can be solved but like other pollution problems the solution demands a blend of technology, public and private action, and healthy doses of economic realism," commented Ontario's Minister of the Environment.



## Briefly: Diapers to Buggies

### DUTTON SEWAGE TREATMENT

A \$520,000 water pollution control system for Dutton, south-west of London, Ontario, was opened February 7 by municipal officials and Ministry of the Environment staff.

The new sewage treatment system took 12 months to complete. It includes two pumping stations, a 10-acre lagoon and a sewer collection system consisting of 15,000 feet of eight-inch pipe.

### DIAPERS AT BULL RUN

There is such a thing as going to extremes. Horses used for logging in Oregon's Bull Run Reservoir area are wearing diapers. These are to keep the natural functions of the animals from contaminating the watershed. The reason they are there in the first place is that the machinery now generally used in the logging industry would churn up too much soil and the horses do not. So with diapers, disturbance to soil and water is kept to a minimum. But disturbance to the horses must be considerable.



### P.C.A.O. SHOW

Canada's second annual pollution control show will be held May 15 to 17 at the Automotive Building of the Canadian National Exhibition.

The Pollution Control Association of Ontario sponsors the show. So far more than 150 companies have signed up for an exhibition from Canada, the U.S., England, Japan, Denmark and the Netherlands.

### THE AUTO FRONT

Latest news on the automotive emissions front sees the industry asking for a roll back on the 1975 standards, hastened by a court order for the U.S. Environmental Protection Agency to reconsider its earlier refusal to grant a delay. General Motors, who long ago called for an easing of the '75 standards, last week suggested a "two-car" strategy. This would require cars in dense urban areas to have more restricted emission control systems than those used in primarily rural areas would be less subject to such equipment. The Ford Motor Company proposed relaxation of standards calling for expensive catalytic muffler systems at least until 1977. This was agreed to by Chrysler Corporation, who have also been campaigning for less stringent controls.

## Study shows river unaffected by paper plant operations

The East River near Huntsville shows no change in water quality since the opening of a new Kimberly-Clark Tissue Mill in that community.

Environment Ontario began studies of the river to assess the effect of the new plant with its sophisticated waste treatment system. A report was released early in March.

The effluent was found to be of high quality. Investigation of the physical, chemical, bacteriological and biological characteristics of the Lower East River revealed that the mill is not altering the quality of the downstream waters.

The report recommends that a routine water quality monitoring program on the Lower East River should be continued by Kimberly-Clark of Canada Limited.

The \$23 million plant, constructed in 1970, was designed primarily to produce tissues for household and commercial use. It contains a \$2 million waste treatment facility including a "save-all", clarifier, settling basin, foam skimmer and a submerged outfall.

The Ministry of the Environment will periodically re-evaluate water quality conditions downstream from the

mill to ensure that the existing high quality of water in the East River is maintained.

This is an example where the application of modern technology, controls exercised by the Ministry of the Environment, and the will of the Company to be a good corporate citizen have combined to permit the establishment of an industry without the impairment of water quality.

## Moore replaces Smith as pesticides chief

On February 1, Ralph E. Moore assumed his new position as chief of Environment Ontario's pesticides-control service.

Mr. Moore replaces W. L. Smith who moves to a new post as special advisor to the pesticides control service until his retirement.

Mr. Moore has a Masters of Science degree from McGill University coupled with extensive experience in the pesticides field. For thirteen years, he was involved in advising pesticides users about techniques and equipment through the extension branch of what is now the Ontario Ministry of Agriculture and Food. In addition, he worked in field research and environmental studies as research manager



## Environment Ontario Honored

Bert Worth (right) commander of York division of the district of the CPS invited over 500 visitors to join the Canadian Power Squadron, presents Environment Minister James Alton with plaque in appreciation of Environment Ontario's contribution to good boating.

The presentation took place at the Toronto International Boat Show in February.

The Ministry's research craft, Monitor III was used by the Squadron at last year's floating boat show at Ontario Place to encourage enrolment in good boating courses. During this program, York

### CARBON MONOXIDE STUDY:

## Decay a major CO source

Recent studies at the Argonne National Laboratories and the Stanford Research Institute in the U.S.A. have thrown a new light on the natural sources of carbon monoxide.

It's been found that the decay of green vegetation and the production of methane are responsible for millions of tons of natural carbon monoxide annually.

There are about 250 billion tons of organic matter in the world of which 1.5 billion tons are chlorophyll. The decay of this chlorophyll, a constituent of all green plants, combined with the formation of a substance called bilins, accounts for 100 million tons of carbon monoxide every year, apart from man-made sources, which total 270 million tons per annum.

### METHANE

Methane, the gas produced by swamps, tropical forests and rice paddies is also now believed to contribute a further three billion tons of carbon monoxide to the overall total. The process takes place when methane mixes with the general atmosphere. It has been estimated that an acre of swamp produces 3000 pounds of methane per year, but because the molecular weight of carbon monoxide is higher than methane each acre of swamp is responsible for 5000 pounds of monoxide. These naturally-produced monoxides

differ from auto and industrial emissions. Their oxygen and carbon isotopic structures are not the same as in man-made carbon monoxide.

The second study by the Stanford Institute discovered that there exists in most soils around the world a harmless fungus with the capability of consuming 550 million tons of carbon monoxide a year, more than twice the output of all automobiles and factories on the planet.

This information isn't a signal for man to curb his efforts in ridding the air of his contributions of this gas, but it gives a new insight into the complicated natural sources of carbon monoxide, heretofore unsuspected.

for the Niagara Chemical Company from 1964 until 1972.

Last year, Mr. Moore joined the federal Government as head of the product compliance unit, plant products division, of the federal Department of Agriculture. In this capacity, his duties covered such areas as registration of pesticide products under the federal Pesticide Control Act.

In his new position as chief of the Ministry's pesticides control service, Mr. Moore will be responsible for the administration of this sector's activities, training and licensing of pesticide users, registering new pesticide compounds, and the enforcement in the field of the Environmental Protection Act, the Pesticides Act and regulations.



RALPH E. MOORE



W. L. SMITH



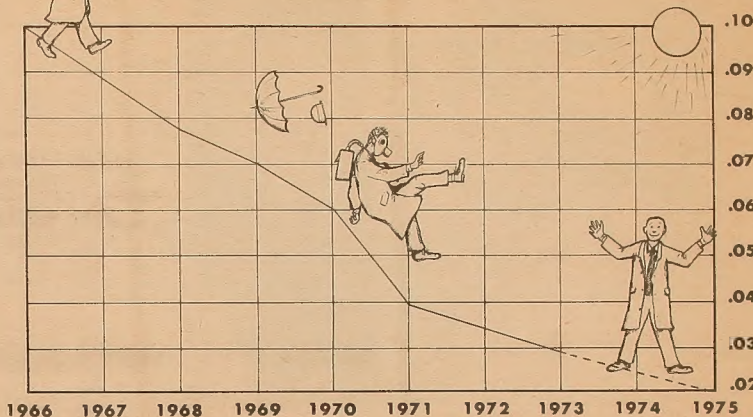
## How a town gains from the subsidy

(Continued from Page 1.)

Westport, a village in the Rideau Lakes north of Kingston, is one of the communities to benefit from the subsidy increase. A sewage works facility worth \$1,037,496 and a water works worth \$564,508 are now underway.

Without any kind of subsidization, the construction of these works would cost the average Westport homeowner \$666.72 per year for the next 40 years. This could be paid via higher taxes or through higher service rates, but one way or the other, the homeowner would have to pay or do without the improved water supply and sewage treatment facilities.

Under the new 75 per cent subsidy, Westport qualified for a 67.3 per cent grant for the sewage works and a 62.4 per cent grant for the water works. The charges to the average Westporter are now level with the maximum Ministry objectives of \$130 and \$110 for water and sewage works.



Art: Hugh McCall

# Ontario's pollution cleanup goes on

\$125,935,368 has been spent or committed by Ontario since 1969 in subsidies for water and sewage treatment works worth a total of \$397,282,044.

A total of 254 water and sewage projects have been approved for subsidy to date and new projects are coming in at the rate of five a month.

These subsidies were introduced by the Ontario Water Resources Commission and carried on by the Ministry of the Environment to provide financial assistance to municipalities. They are Ontario's answer to the problem of providing these services while keeping their cost to the individual citizen within reason.

That figure of \$125,935,368 does not include an additional \$1,650,000 subsidy towards the \$39 million cost of our South Peel water and sewage works.

This system of financial assistance is accelerating the development of a large number of projects across the province. Completed projects account for \$19,635,735 in subsidies, projects under construction account for another \$35,537,233, and the balance is committed to projects awaiting Ontario Municipal Board approval, under final design or under discussion with municipalities.

### SUBSIDIES

The Ministry has just announced increased subsidy levels of special significance to smaller municipalities. The previous maximum subsidy of 50 per cent of the capital construction cost of water and sewage works is now raised to 75 per cent.

The overall effect will be a continuing reduction in water pollution and an increase in the supply of adequate, safe water.

Since its founding, the OWRC and subsequently the Ministry, has issued certificates for municipal water and sewage works worth \$2.64 billion. Of this, \$1.83 billion has been spent on sewage works

and the balance on water treatment facilities. Last year alone \$344 million in sewage and water works were approved, \$75 million of which were provincially financed.

Over the same period, industry has spent or committed approximately \$255 million to control water pollution, a cost figure that does not include joint industrial-municipal installations.

The Ministry has completed an assessment of the extent and magnitude of industrial water pollution and established an abatement program with every major industry in Ontario.

In addition to providing financial incentives for municipal treatment works, the Ministry has constructed and operates 412 facilities involved in providing water or sewage treatment for 223 municipalities.

### PROGRESS

And the other components of the ministry have made equally outstanding progress in environmental management and protection.

The air management branch now monitors atmospheric contamination in 44 Ontario communities, maintaining an air pollution index and alert system in Toronto, Hamilton, Windsor and Sudbury.

Records of the index since it was instituted in these four cities provide a clear indication of the general improvement of urban air quality as a result of the Ministry's air pollution control program.

From March 23 to the end of 1970, Toronto's index exceeded 32 on 17 occasions and a reading of 50 twice. Through 1971, the index exceeded 32, 19 times and 50 once. In the whole of 1972, Toronto's index passed 32 twice and did not approach 50 at all.

In Hamilton, the index exceeded 32, 23 times during 1971 and four times throughout 1972. In Sudbury, the index passed 32, 26 times in 1971 and

## SULPHUR DIOXIDE LEVELS DROP IN TORONTO

The line on this chart is a dramatic indication of 1966 to approach .03 in the past year. As more the improvement of air quality in Metropolitan Toronto sources of this gas come under control, the level ronto since 1966, showing a steady drop of sulphur dioxide levels from .10 parts per million in

seven times in 1972. Windsor's index exceeded 32 twice between March 19 and December 31, 1972 and 11 times in 1972. Nine of these 1972 peaks occurred in the first two months of the year.

Every major source of air contamination in the province has been surveyed and placed on a control program either voluntarily or under orders. A total of 113 Ministerial orders were issued under the Air Pollution Control Act, 1967, 80 of which have been complied with. The director of the branch has issued 16 control orders under the Environmental Protection Act, 1971.

Industries in Ontario have spent, or committed for spending in their control programs, a total of \$810 million for air pollution control.

### LEVELS HALVED

The results of air pollution control are showing. In Toronto, for example, between 1966 and 1971, sulphur dioxide levels were cut in half and suspended particulate matter, the other major air contaminant

was reduced by a third.

Noise studies have been undertaken during 1972 in Toronto, Hamilton, London and Woodstock, to prepare a foundation upon which Provincial and municipal noise regulation can be established.

In the cottage pollution control program alone, the private waste and water management branch has surveyed approximately 15,000 cottages since 1970, taking appropriate action where unacceptable facilities were found.

The pesticides control service licenses and supervises some 3,000 operators and its training courses last year alone were attended by 1,500.

January 1, 1973, all commercial pesticides were classified and the display, distribution, and sale of these pesticides were brought under a new provincial licensing system.

The waste management branch has registered and supervises more than 1,200 waste disposal sites in Ontario. More than half of these are already operating in accordance with Ministry requirements and the

balance are on programs to bring them into compliance.

A Ministry-conducted, major recycling experiment in Burlington was completed and assessed in 1972, providing practical experience in public participation, collection and marketing of reclaimed waste.

### CLEANUP PROGRAM

Through the summer of 1972, special surveys of litter and abandoned cars in Ontario were carried out. A public information and education campaign on litter was started and will continue in 1973. Next summer, a cleanup program dealing with abandoned cars will get under way.

A Task Force on Solid Waste was set up in November to recommend ways the Ministry can reduce the amount of waste generated, bring about the return and reuse of articles and material and adopt policies providing for the salvage of material and energy. Working groups are set up within the Task Force to investigate beverage containers and milk containers.



Sights like this foam-flecked waterfall are steadily vanishing in Ontario.



# Burlington report - a signpost



The Burlington experiment showed one approach to garbage problems.

Photo: Huck Heerema

## Recycling study goes on

"The Burlington Waste Reclamation Study leaves a number of questions that must be answered in future studies," states John Heaman, former director of Environment Ontario's waste management branch.

Mr. Heaman, now detached from the branch to serve as full-time executive officer of the Ministry's recently appointed solid waste task force, said the Burlington experiment was concerned with two alternatives.

Home separation was being studied as a possible interim measure until municipal reclamation plants become a practical proposition, he said. But it was also being considered as an integral part of a future reclamation scheme, with home separation of one or more classifications of waste and with the balance of the waste being dealt with at a central reclamation point.

Mr. Heaman said the second alternative was an important one to explore, because the design of a central reclamation system would depend on the quantity and type of wastes that can be separated at the source—the household that produces it.

### LOW KEY

He stressed that the study was an early step in the branch's program to establish the facts of life in waste management. "It was a controlled experiment—a deliberate low-key approach," he said.

"No serious attempt was made to encourage participation by a publicity campaign. No special assistance was provided to residents in the study area, such as properly designed containers for the separated materials."

In addition, Mr. Heaman said, "The study began with the request to separate wastes into five distinct classifications—a completely unrealistic approach to a recycling opera-

tion but, in our view, an essential approach to an initial data gathering study."

"Viewed in this light, the study proved to be highly successful."

### QUESTIONS

The questions that must now be answered are:

Can any single classification of waste be separated at home reliably without major inducement?

What inducements are needed for continuing reliable multiple separation at home?

What changes in collection systems improve the economics and enable problem areas to be dealt with more effectively?

Can separated material be used in a larger scale by the secondary materials industry without major government intervention?

Mr. Heaman said "the waste management branch will continue studying these problems to determine the best answer for our waste disposal."

## Involved citizens encouraged

The Burlington Waste Reclamation Study should encourage public participation in recycling projects, not discourage it, according to the Burlington Citizen's Committee for pollution control.

The study indicates that about 40 percent of the families in the experiment area had materials out for a given pickup. The committee, assuming that not every family would have separated material out every week, calculated that about 70 percent of the people in the study area were active in separating their garbage.

Committee members were especially enthusiastic about the results in the apartment building in the study area where tenants decided to continue the separate collection project on their own after the study ended. They are still separating some 700 pounds of recyclables per week.

The committee recommended research into which resources are in danger of exhaustion and which materials are most essential to recycle. In addition, since at best about 25 percent of household waste can be reclaimed, strong

"The results of the Burlington Waste Management Study are a signpost," Wes Williamson, acting director of Environment Ontario's waste management branch said.

"They indicate the direction we must move next. In our next recycling project, I think, we can hope to work on a practical basis—successfully recovering and reclaiming material."

The Burlington study began in mid-1971 and concluded earlier this year with a report from the consulting engineering firm of Phillips Planning and Engineering Ltd., Burlington. Involved in the project, with the engineers and the Ministry, were the Town of Burlington and the Citizens' Committee for Pollution Control.

A community of 1,000 homes—4,000 people—was selected inside the town of 85,000. These homes included single-family houses, townhouses, apartments, a senior citizen area and an apartment area.

The collected items were newspaper, clear and colored glass and mixed metal cans. Actual collection began August 25, 1971, and the quantities involved in each collection were recorded throughout the 23 weeks of collection.

### HOUSEHOLDERS

In interviews, between 81 and 88 percent of the householders indicated willingness to separate their refuse for recycling. During the collection period, 60 percent said they were separating newspaper, 52 percent clear glass, 48 percent colored glass and 52 percent metals. About 37 percent said they were separating all four items.

In a number of actual collections, from 19 to 40 percent of the homes put out separated newspaper, 24 to 31 percent clear glass, 14 and a half to 19 percent colored glass, 20 to 38 percent metal cans and from six to 21 percent put out all items.

The Burlington Citizen's Committee, interpreting these figures, reasoned that householders would not necessarily accumulate enough material to put out every week for collection, and estimated that close to 70 percent of the people in the study area were actively participating.

The report of the study found that the average home in the study area put out 3.96

pounds of newspaper a week, 0.71 pounds of metal cans and 2.21 pounds of glass. Projecting these figures for the entire town, the engineers found 50.4 tons of newspapers, 9 tons of metal cans and 28.1 tons of glass would be available for recycling—about 14 and one half percent of the town's weekly waste load.

### SOME PROBLEMS

Based on experience in the study, the consultants concluded that it was highly unlikely that all recyclables would be separated in the home, even with legislation requiring separation. The study investigated market possibilities and discovered that there were problems in some areas. Burlington, if the co-operation level remained as high in the town as it did in the study area, would produce about 50 tons of newspaper a week. At the moment, the market in the immediate area cannot absorb this quantity, according to the study report. The major problem appears to be the lack of a deinking re-pulping facility—a costly facility that would require at least 350 tons of newspaper daily to operate and that would need a great deal of marketing to find guaranteed outlets for the recovered, reprocessed pulp.

Projected glass recovery levels would present no problems with glass companies already recycling 20 percent and apparently willing to double that amount in their production.

The research indicated that there would be problems in getting reclaimed bi-metal cans absorbed into the market on a large scale.

### 14½% RECYCLED

Study results showed that the householder was recycling approximately 14 percent of his refuse, and that the collection, storage and transportation for the recycled material cost more than four times the revenue received from its sale. This would mean, in terms of a collection project for the whole of Burlington, an overall 40 to 50 percent increase in garbage collection costs.

Of course, improved markets or a different collection procedure could affect this result.

From the statistics compiled through the study, it was estimated that there would be a saving of 10 percent or less in the sanitary landfill site.



Some Burlington householders took a systematic approach to waste separation.



# A CIVIC call for action

In the November issue of *Civic*, the Canadian public works magazine, editor Walter Jones reviewed the Burlington study in detail and assessed the results in this editorial.

As in most studies, everybody learned something from the Burlington experiment in recycling.

Spurred by the current concern over ecological problems, citizen groups have zeroed in on garbage. Thus, it wasn't surprising that when the recycling study was initiated there was active public interest and participation.

But really, who wants to mess around with garbage? There are more exciting things to do. This was the first lesson of the study. It probably means that if reclamation and recycling are to be part of our life, provincial and municipal bodies must make it quite clear where we stand. Cooperate or stop talking about the environment.

The second lesson is that the economics of recycling have to be justified. Says the report:

"Each area must enter into in-depth market research to ensure that the reclaimables can be marketed." Discussing this very subject in *CIVIC* last month, J.J. Kaller of Vancouver pointed out that recuperation of values from municipal waste is not economically viable unless there is a continuing demand for these values.

Obviously, because of the high cost of investment needed for recycling plants, small municipalities cannot afford them. This raises the question: how many of the larger municipalities

will be able to afford them? Judging by the state of municipal finances, very few.

So the ball bounces right back into the provincial lap. Now that the study has been made and the findings, despite the negative tone, regarded as successful, what is the next step? Although waste is purely a local problem, in total it is national in scope and must first of all be tackled at its source.

Senior government should turn its attention to the packaging industry for a start. Should there not be, suggests

Mr. Kaller, a set-up such as a Canadian Council on Non-Sewerable Wastes to advise Ottawa on enhancing recuperation of values from non-sewerable refuse?

Only a systematic, scientific and coordinated approach to recycling, Mr. Kaller stresses, can turn one man's wastes into another man's raw material. Anything else is—and will be—hardly more than the proverbial "spinning of wheels."

Clearly, the danger here is that recycling may become nothing more than a palliative.



## The public have a say

Public reaction was varied in the study area, as some of the comments to study interviewers show:

"It's silly: It must come from the government."

"Why not use a central disposal area like a shopping centre and continue the project after the study finishes?"

"I'm not interested. It's a nuisance."

"Might we start recycling other items soon?"

"There should be an incentive to encourage co-operation."

"Since we pay taxes, we shouldn't have to separate garbage. Let welfare cases do it."

## Where the action is

*Environment Ontario is committed to the systematic, scientific and co-ordinated approach to waste management recommended in this editorial from Civic magazine.*

Over the past 12 months, firm steps have been taken to deal with the proliferation of disposable containers that are adding to our waste load.

During the course of 1973, a provincial task force on solid

waste will prepare recommendations to guide the Ministry in dealing efficiently and properly with the six million tons of waste generated annually in Ontario. The force, chaired by Alva S. Bray, former senior assistant deputy minister of the Ministry of Tourism and Industry, was appointed by Environment Minister James Auld to "get the whole story on the solid waste problem."

The task force began regular meetings in November. It is setting up work groups from its membership to deal with specific tasks. These groups will collect and initiate information and submissions from concerned parties within each one's study area.

The final report will be a valuable tool in Environment Ontario's continuing refinement of its waste management program.

## Unionville recycling volunteers the key

While the Burlington study covered a separate collection on a large scale, approximately 24 volunteers are trying to make a success of recycling in a small community.

The Unionville recycling depot is dependent on people bringing waste paper, glass and metal to a central collection point.

Once a week they open the doors of a two-car garage on Main Street. And a steady stream of cars from around town and from other communities—Thornhill, Stouffville, Markham—pull up in front of the doors. The drivers unload

bundles of paper, and cartons of bottles and cans.

They get more paper than anything else—about six to eight tons a month. When they have enough material for a truckload, they have a market for it.

Working on a limited scale, with volunteer labor, they have made a successful recycling operation—successful enough so that groups in other communities in the area are thinking about depots of their own.

At this point, they are taking stock of what they have accomplished and asking "Where do we go from here?"

It's not an easy question to answer. They have toyed with the idea of separate collection, but, as one volunteer said, "We get a much better quality garbage with the depot." And she's right. People willing to deliver their separated waste to a depot are willing to take the time and separate it properly.

They have taken some steps to approach their regional government to develop municipal involvement but this is just a start in this direction.

And there's one question that comes sooner or later to any volunteer engaged in recycling—Is it worthwhile?

One measure of success is involvement. A healthy number of citizens are interested enough to devote their time to the depot, and an even larger number of people are willing to deliver their waste to it.

Mrs. Carol Danard and Mrs. Dorothy Weatherhead, both active members in the depot operation, said their environmental horizons are expanding.

They are starting to look at the sources of waste—containers, packaging, marketing and consumer habits.



Two volunteers sort waste at the Unionville depot.

## Wealthy suburbs are the richest waste producers

Prosperous suburbs have recently been compared to inner city areas in total tonnages of solid waste, and surprisingly enough, the poorer sections of Cleveland, Ohio generated consistently higher amounts of waste, based on studies in the Cuyahoga County area.

The consulting firm involved in the project said that belief has been common that affluent communities generate more solid waste because the residents can afford to buy more. The study disclosed that household wastes in the suburbs totalled three pounds per person per day, while the rate for the inner city was slightly above this figure.

Suburban dwellers, the study concludes, are able to purchase better quality foodstuffs and materials and as a result, do not have to discard as much. Fourteen percent of inner city wastes was food-based, against only eight percent in higher level areas.

## The people managing waste

Chairman of Environment Ontario's task force on solid waste is Alva S. Bray who recently retired from the Ministry of Industry and Tourism where he was senior assistant deputy minister. Prior to this, Mr. Bray served as deputy minister of the former department of tourism and information from 1964 to 1972, and has been with the Ontario government since 1943.



JOHN HEAMAN

John Heaman, director of Environment Ontario's waste management branch, has been detached from his duties and will serve as full-time executive officer of the task force. Mr. Heaman was born in Winnipeg, Manitoba and is a graduate in engineering from McGill University. He has worked in various capacities with Dome Mines Ltd., Canadian Industries Ltd., the Royal Canadian Air Force from 1940-45, Chemicals Ltd., Heaman Paint Co., and the Great Lakes Institute. He is a member of the American Public Works Association, International Solid Waste Association, Professional Engineers of Ontario, the Canadian Public Health Association and an associate of the Institute of Environmental Sciences and Engineering of the University of Toronto.

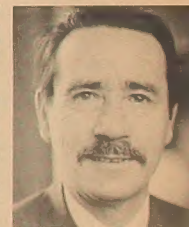
Wes Williamson has been appointed acting director of the waste management branch in Mr. Heaman's absence.

## Litterbugs get a lesson

People who receive littering citations in Washington, D.C. will soon be given a choice. They'll have the option of paying a fine or attending a special "litterers' school."

Instruction will take the form of two 2-hour classes on environmental problems and programs. Only serious litterers will be involved in this new "treatment", not those who might discard the occasional candy wrapper or cigarette package.

Meanwhile, further south in Jackson, Mississippi, a newly-formed city's group has taken its own measure to combat the litter problem. The group plans to take motion picture films of litter code violations and show them at public meetings.



WES WILLIAMSON

Mr. Williamson, assistant director of the branch, has a degree in civil engineering from Queen's University, Belfast, Northern Ireland. He has worked on water supply and pollution control schemes in Northern Ireland and Montreal and as a government employee in Malaya and Nigeria. Mr. Williamson joined the Ontario government's waste management program in 1968.



## Road noise barriers tested

Noise barriers set up along expressways in Metropolitan Toronto showed limited usefulness, according to an Ontario Ministry of Transport and Communications study.

Five different types of barriers, from 10 to 12 feet high, were studied in the two-year noise control experiment, including plywood, aluminum and lightweight concrete. The report indicated that noise levels at the houses behind the barriers dropped only two to six decibels. Levels immediately behind the barriers, where reductions were of little benefit, dropped as much as 14 decibels.

Ontario officials estimated that barriers would have to be from 20 to 25 feet high to give a significant 10 decibel sound reduction for houses along the freeways. And these barriers would only affect single-storey homes. "Second and higher storey houses become virtually unprotectable by noise barriers," the report said.

The experiment was especially significant since traffic sounds are the greatest single source of noise complaints according to Environment Ontario.

But in spite of the limited muffling effectiveness of the barriers Metropolitan Toronto erected along the Don Valley Parkway, some people shielded by the barriers wanted to keep them.

While the barriers were "largely ineffective" in sound shielding, according to the report, there seemed to be a psychological effect, cutting off the sight of heavy traffic and some of the dirt and debris.



The noise barriers tested in Toronto had little effect on heavy freeway traffic like this.

## Total ban drastic:

# OSDA endorses one method

(Continued from Page 1.)

An additional benefit in this method is the revenue from the convenience tax, which could be applied to research in waste reclamation and to the improvement of waste disposal facilities.

The final, and most drastic, option outlined to the task force is a total ban on non-reusable beverage containers.

It is simple and the consequences can be predicted with accuracy. An almost immediate effect would be a drop in the amount of bottles and cans in general litter and the total waste load. But the economic repercussions in the container industry would be disastrous. Because

of this massive impact, this measure could only be implemented over a number of years. This delay in implementation would substantially reduce the effectiveness of this option.

### STEPS TAKEN

The Ontario Soft Drink Association, which has discussed the problem with Mr. Auld and Ministry staff over the past few months, has submitted a proposal to the task force which follows closely the second option outlined here.

And at least two bottlers in the Province have taken steps to raise the deposit amounts from two and five cents to five and 10 cents on small and large bottles.

Mr. Auld said the task force will consider these options along with any other approaches to the problem that it may find in developing its recommendations.

"We have seen over the past year a growing public concern over waste and litter. Certainly my intention is to discourage this whole throwaway philosophy into which we are slipping."

### MILK CONTAINERS

Another working group within the force has been established to direct its attention to the area of milk containers.

A regulation, effective last August, effectively forbids the use of non-returnable, three-quart plastic milk jugs. Another



R. H. WOLVETT

er regulation, extending this ban to throwaway plasticized paper three-quart milk containers, goes into effect November 1, this year.

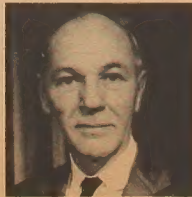
In addition to its general investigations in this sphere, this work group will consider the impact of the second regulation on the industry and the community, Mr. Auld said.

"From time to time over the next few months I will be asking the members of the task force to consider other specific areas of waste control and treatment. I am expecting much from this group of people," he said. "They have an exceptional background of talent and experience in a wide range of specialties to bring to bear on waste problems."

During the conference, A. S. Bray, chairman of the task force, outlined the structure and procedure of the force and its working groups.

He introduced R. H. Wolvett, who will chair the beverage container group and Roger C. Clarkson, chairman of the milk container working group.

Both groups will draw on information and comments from all parties and groups concerned in each particular sphere before presenting final recommendations, Mr. Bray said.



ROGER C. CLARKSON

## Waste conference meets June 17-20

The 20th Ontario Industrial Waste Conference will be held at the Skyline Hotel from June 17 to June 20.

During the course of the conference, 14 papers on industrial waste problems and controls will be presented.

Topics will cover government-industry relationships, biological treatment, petroleum and petrochemical controls, and current concerns and technical approaches.

W. L. Dick of the Industrial Waste Branch and J. D. Heaman of the Waste Management Branch, Ministry of the Environment, will present papers on contingency planning and the overview of the solid waste problem, relative to industry.

Further information on the conference is available by writing the Ontario Industrial Waste Conference Committee, 135 St. Clair Avenue West, Toronto, Ontario. M4V 1P5.

## Belleville opening

A \$2 million extension to the Belleville water pollution control plant was officially opened by Environment Minister James Auld. This addition gives the 10-year-old facility secondary sewage treatment capability.

Mr. Auld commended the city of Belleville for its contribution to an improved environment. Effluent discharging into the Bay of Quinte is more than 90% free of impurities, Mr. Auld said. With the future inclusion of the phosphorus removal process at the Belleville plant, the water quality in the Bay of Quinte will continue to improve.

Assisting Mr. Auld at the ribbon cutting were Mrs. Robin Jeffrey, Belleville's

mayor-elect and Dr. Richard Potter, Minister of Health member for Quinte and a former mayor of Belleville.

### NEW ATTITUDE

Dr. Potter noted that in 1951 Dr. Berry, later general manager of the O.W.R.C., first alerted Belleville to the need for an adequate water treatment system. Unfortunately, Dr. Potter said, the council had ignored the warning and it was not until 1962 that the primary treatment facility was completed.

However, Dr. Potter said, today a new attitude exists in most Ontario communities resulting in Ontario's present position as the leader in the construction of water treatment facilities.

## Stelco eliminates fluoride process

An experimental program to reduce fluoride emissions from the Stelco plant at Hamilton Ontario received the approval of the Ministry of the Environment, with the cooperation of the company.

The program is designed to eliminate all fluoride emissions from the No. 3 open hearth shop at the Hamilton Hilton works and virtually eliminate Stelco as a source of fluoride air pollution. Presently, this shop accounts for almost all the fluoride emissions from the Steel Company of Canada in Hamilton. The program will involve full scale trials over an eight month period using a flux that has no fluoride content. The flux used in the current process, Fluorospas emits fluorides as a by-product in the manufacture of steel.

### DOWN 25%

Fluoride emissions from the company's facilities have already been reduced by 25 per cent with the startup of the new basic oxygen furnaces and the phasing out of No. 2 open hearth.

Commenting on the action, James Auld, Minister of the Environment said, "This is definitely a step in the right direction. If successful, this

will accomplish the abatement of air pollution through a change in the steel making process rather than by adding expensive equipment to clean up an existing process".

## \$50 million on controls, production

General Motors announced recently it intends to spend \$50 million during 1973 in Canada on pollution abatement and production equipment.

The corporation's total expenditure last year for plants and equipment was \$35 million, well below the \$85 million spent in Canada in 1965 when the industry expanded rapidly to take advantage of the Canada-U.S. auto trade agreement.

A Canadian spokesman for the firm said that the 1973 figures do not include any expenditures for new plants. All the money is earmarked for model changeover costs and water and air pollution control equipment for existing installations.



## Novel vacuum-powered disposal system studied

A new waste disposal system which uses vacuum pressure instead of water gravity pressure is currently under study by the Ministry of the Environment. The chief advantages of the system are simplicity and adaptability in areas where sunken pipes are not an economic possibility.

This treatment system was originally developed in Sweden and uses the principle of vacuum instead of water pressure for the transportation of sewage. It has the ability to lift waste uphill in small diameter pipes. The available lift is 15 to 20 feet, and the pipe sizes are 3, 4 and 6 inches in diameter.

Because of this lift factor, pipes may be laid at the frost line depth parallel to the ground profile, rather than to a grade. This means the sewage can flow around corners and even uphill. All the power required for a system of this type is located at the outfall instead of pumping stations at each end of the transmission system. There are two systems developed for this method, the two-pipe and one-pipe designs.

In the twin pipe system, one pipe carries the "grey water" (household washing, laundry water) and the other "black water" (toilet wastes). The single-pipe system carries combined wastes, and does appear to have application in Ontario. With the vacuum system, much less water is required to operate flush toilets; one quarter of a gallon of water, compared to two to four gallons in a conventional gravity/pressure system.

At the present time, the two-pipe system is not practical for use in Ontario, nor does it offer any immediate economic benefits. The single-pipe system is under evaluation at a site in the eastern section of the province where local conditions such as rocky surface soil or a high water table might favor this kind of installation.

With a one-pipe system an important point would be that no changes to existing building systems are required and sewage from the collection tanks of the system could be pumped to a conventional system or directly to a treatment plant.

## Auld opens new Domtar abatement facility

Domtar Limited has a new primary effluent treatment plant in operation in the company's plant at Red Rock, Ontario, to reduce water pollution.

The Hon. James A. C. Auld, Minister of the Environment, officiated at the official start up of the equipment.

Among the officials present were Everett Biggs, Deputy Minister of the Environment, W. R. Lawson, vice-president and general manager of Domtar Packaging; A. P. Hamilton, president of Domtar Pulp

and Paper Products Ltd.; Jack Stokes, member of the Ontario Legislature for Thunder Bay; and Keith Penner, member of parliament.

The system, part of a projected \$16 million program by the company for water and air pollution abatement consists of a new \$2.7 million clarifier and associated equipment for the removal of suspended solids in the liquid effluent from the mill.

A secondary treatment clarification system will be installed at a cost of \$2.5 million by 1974.

## Thermal waste disposal plants open in Hamilton, Mississauga

A thermal liquid waste disposal plant has been opened in Hamilton and a second facility is presently under construction in Mississauga, Ontario.

The Hamilton plant is operated by Interflow Systems Ltd. and has a daily capacity of 19,000 gallons, 3,000 of which are supplied by Toronto area plants of the Steel Company of Canada.

The plant's daily rate of consumption depends in large part on the types of materials being incinerated. The company estimates there are hundreds of potential customers in the Toronto/Hamilton/Niagara district, with a possible 30 million gallons to be destroyed annually.

One unit of a planned three-unit complex is now in operation while the additional units, at an estimated cost of \$400,000 each are in the drawing board stage. These will be

constructed when the demand dictates.

### CHARGES

Charges for this service will range from 6.5 cents per gallon to 26 cents per gallon, dependent on the characteristics of the material to be incinerated.

Meanwhile, Goodfellow Enterprises Ltd., a subsidiary of Canadian Industries Ltd. has opened a new \$1.5 million thermal disposal plant in Mississauga, Ontario.

Built on 37 acres of land leased from the Ontario Ministry of the Environment, the plant will have a capacity of up to 10 million gallons of liquid and semi-liquid wastes. The second stage development with chemical treatment facilities for inorganic wastes will, when completed, increase the overall annual capacity to 20 million gallons.

When fully operational, the plant will employ a staff of 20,



Students collect micro-organisms for class environmental studies.

## ENVIRONMENTAL STUDIES

### At the scene of a fish kill

By DAVID ALLEN

**Educational Resources Co-ordinator**  
When a massive fish kill occurs in one of the lakes, rivers or streams of Ontario, the reality of environmental studies will be brought home to both students and teachers under a new program developed by the Ministry of the Environment.

The program, aimed at all levels of the educational system, will put students into a real life situation—the determination of the severity, cause and implications of a major change in the biota of a body of water as a result of some disturbance. The disturbance may be a change in water temperature, a discharge of heated material, dumping of a toxic chemical reduction in the quantity of flow or oxygen depletion from organic loading.

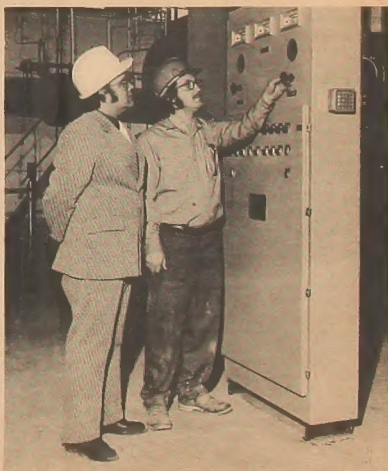
The initiation of a specific program is dependent on two factors. One factor is the occurrence of such an incident or disturbance where the Ministry must determine the cause and, two, the desire of a local school to become involved. The severity of the individual situation and the safety factor involved will determine the degree

of student involvement and the school level of students participating (elementary, secondary or post secondary).

The student study is under the supervision of the Information Services Branch (Educational Resources Section) and will coincide with the conclusion of testing by Ministry officials of their investigations.

Each study as part of the program will consist of three phases. The first phase will involve classroom preparation in the form of a discussion of background information (surrounding land use—watershed areas) and instruction in survey techniques. The second phase takes place outside the classroom. This onsite learning experience will permit the students to determine the biological and physical factors in the water. The third and final stage is the most important and takes place once again in the classroom. Here the data collected in the field is analyzed. Important here is the study of the steps to be taken to prevent similar occurrences.

Teachers interested in becoming involved in such a program should contact the Educational Resources Co-ordinator at the Information Services Branch of the Ministry.



J. E. Coleman, left, Ontario manager, The Goodfellow Group, and William Nesbitt, chief operator, Goodfellow Mississauga, watch the control panel at Goodfellow's new liquid waste treatment plant at Mississauga, during run-in tests.



# EcoLogic

## GOOD NEWS

It's time for Ontario, like Mark Twain, to say that the rumors of our recent death have been greatly exaggerated.

There are still people who flaunt pollution as some sort of bogyman—a threat to our health and our very lives. In the cold light of fact, that is now a very puny bogyman.

A number of articles in this issue give a very clear picture of just what has been accomplished in environmental protection and restoration in this province. And continuing control programs on every single major pollution source in Ontario will guarantee that the past decade's improvement in environmental quality will continue.

In Metropolitan Toronto, sulphur dioxide levels have dropped from .1 parts per million in 1966 to .04 by 1971. This steady improvement could reach Environment Ontario's objective of .02 parts per million as soon as 1975.

Over the past decade, levels of suspended particulate matter have been cut in half in Toronto. These are the two types of atmospheric contamination on which Ontario's air pollution index is based.

And Toronto Harbor Police report that fish have returned to the freshwater port they patrol—a clear indication of improved water quality. They have spotted cark, rock bass, sunfish, pike, perch, blue gill and even coho salmon in waters that were devoid of marine life for years.

The good news is not confined to Toronto. This is just part of a general improvement across Ontario. Industrial and municipal waste water treatments and new phosphate removal programs all along Ontario's side of the Great Lakes have shown results.

While the U.S. lakeside states have farther to go, their control programs are under way and Ontario, with the help of Environment Canada, is encouraging their progress.

The emphasis is shifting from repair work and rehabilitation of the water and air to environmental management. Some of this management is guided by law and regulation, but much of it is a matter of individual responsibility.

In our schools and institutions, in our industries, in our homes and our playgrounds, we must learn to control our wastes. The air, land and water of Ontario are a common heritage. We all share this heritage and we all have an obligation to protect it.

## OPINION

*One of the roles of the weekly newspaper is to assess the opinions and sentiments of its community and focus these into a call for action on the editorial page. Publisher Robert Watson, in The News, which in various editions serves Agincourt, Scarborough, West Hill, North York and Toronto's east end, directed this editorial towards a one of the many approaches to garbage disposal being studied by Environment Ontario.*

Now that our local councils have more or less got underway for their short two year term, we believe one of their foremost projects should be to begin the recycling of our wastes.

A recent news report tells of the success of two North Toronto women who have a L.I.P. grant to make their garbage separation plan work.

Much talk has been heard about our tons of garbage, but action seems to be slow in coming. Let's face it, the first and most important task will be when local councils decide to pass a bylaw to require residents and businesses to sort their own garbage.

The next step would be to use borough garbage collectors to pick up bottles, cans, paper or organic waste and take it—not to the usual dump—but to a commercial company for recycling. We really believe that, if necessary, government funds should be used to make commercial recycling companies available. We could, however, keep a limit on costs to that which we now have.

It is our opinion that we must cease thinking about landfill sites in other communities and concentrate on getting wastes into plants for recycling.

If council can't provide the leadership perhaps groups of citizens would begin to put pressure on local council for action NOW.

A small note. This newspaper sends all of its waste newspapers via a private contractor to a recycling plant.



Art: Hugh McCall

## Sportsmen urged to help preserve environment

There's a story that went the rounds a while ago about the fellow who went ice-fishing and brought home 65 pounds of ice—his wife almost drowned trying to cook it!

There's also a good change that he left behind more than he took away.

A few irresponsible ice-fishermen have contributed to Ontario's pollution problem by leaving garbage at the shelter. It gets into the water as soon as spring break-up takes place. Some even go as far as to put it down the hole, to avoid unnecessary delays in polluting the water.

A few others have found that they have left it far too late to remove the shelter itself. This also becomes a nuisance, especially when washed up a few weeks later on somebody's cottage property.

Following established Ministry of the Environment policy, the co-operation of ice fishermen and snowmobilers was encouraged this winter

in a publicity program covering all aspects of wintertime activities on the province's lakes and rivers.

Regulations covering temporary shelters, are now being developed by the Ontario Government. While licensing of these shelters under the new regulations will not be required until the winter of 73-74 Environment Ontario, in co-operation with the Ministry of Natural Resources launched an intensive inspection program at the start of this winter.

The program is intended to ensure that waste materials generated by activities on frozen lakes and rivers are adequately collected and deposited at appropriate land-based disposal sites, and that shelters are removed from the ice before spring break-up.

With a concentrated program of education and information it's expected that these efforts will result in a marked improvement in the disposal of these winter-sports generated wastes.

## Container problem:

## Other places, other ways

With the province of Ontario looking at choices for beverage container control, it's time to look at methods used by other provinces.

In British Columbia, Alberta and Saskatchewan, legislation has been passed requiring refunds on all types of carbonated beverage containers when they are returned to either a retailer or collection depot set up for this purpose. The British Columbia program has been in operation for two years while those in Alberta and Saskatchewan are relatively new, having been put into operation within the last year. Due to the high cost of recycling cans, the effect in B.C. has been a heavy increase in the price of canned soft drinks. There's been an equal increase in the use of cans over reusable and non-reusable bottles, coupled with an overall light drop in the anticipated growth of the soft drink industry. This was caused in part by a spate of poor weather last summer and at the same time, a de-emphasis on soft drink advertising.

**ALBERTA EXPANDS**  
The province of Alberta,

with legislation one year old covering refunds on refillable and non-refillable bottles, enacted additional regulations on January 1. The revisions added liquor and wine bottles to the list, and expanded the obligation of retailers to pay cash refunds for containers of brands they sell. The stores are also required to post the addresses of nearby universal depots which will handle liquor and wine bottles as well as cans and soft drink bottles. Empty beer bottles will continue to be handled by long-established brewery operated return depots.

Albertan retailers must now accept up to 60 soft drink containers a day per customer for the brands they sell. However, a one cent handling charge is being paid for each container by the bottlers to offset this inconvenience. As in B.C., the first effect has been higher prices for soft drinks.

The refund on wine and liquor bottles has been set at five cents each, which was included in general price increases announced on January 1. These bottles will be crushed and made available for recycling;

none will be re-used.

### CAN RECYCLING

By the end of this year, more than 2.4 billion steel cans, representing 6,500 tons of scrap steel—will be magnetically pulled from trash piles in the U.S.A.... about three times the number reclaimed in 1971. The American Iron and Steel Institute says 16 magnetic reclamation systems are now operating in the U.S. with 11 more to be phased in before 1974.

Reclaimed steel cans have found four major markets. The steel industry uses them for remelting into new steel, and copper firms use them as a precipitating element to recover copper from low-grade ore.

Every ton of scrap steel contains 7.5 pounds of tin, which is chemically reclaimed. Ferroalloy manufacturers combine can scraps with silicon and manganese for melting and casting processes.

According to the AISI, even communities remote from these markets can benefit from magnetic reclamation. Extraction of cans from trash can extend landfill life by 25 percent or more.

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